

**V(A). Planned Program (Summary)**

**Program # 2**

**1. Name of the Planned Program**

Preserving Water Quality of North Florida Watersheds - Climate Change

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships				35%
111	Conservation and Efficient Use of Water				35%
133	Pollution Prevention and Mitigation				30%
	<b>Total</b>				100%

**V(C). Planned Program (Inputs)**

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	5.0
Actual	0.0	0.0	0.0	5.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	538311
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	538311
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

**V(D). Planned Program (Activity)**

1. Brief description of the Activity

The activities during the second year of the project included: Project personnel meetings to plan for the second year of implementation of the study; selection of a suitable site representing typical soil type,

cropping system and management (Mears Farm in Marianna, Florida); continue collection of historic land-use data in the watershed and at the study site; installation of four Mesh-bags experiments to measure soil erosion; collection of soil and water samples; and continued monitoring of aquatic insects in two major streams in the watershed.

**2. Brief description of the target audience**

The target audience for the project include: crop producers in the Apalachicola River basin, small and limited resource farmers, extension personnel and environmental organizations.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Plan</b>	50	60	50	50
<b>Actual</b>	75	80	30	30

**2. Number of Patent Applications Submitted (Standard Research Output)**

**Patent Applications Submitted**

Year: 2010  
 Plan: 1  
 Actual: 1

**Patents listed**

Mesh-bag method to measure soil erosion.

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
<b>Plan</b>	2	7	
<b>Actual</b>	2	3	5

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Research and extension-type publications Grant Proposals Submitted and Funded
- Dissemination of Results to Stakeholders Training of Graduate and Undergraduate Students
- Not reporting on this Output for this Annual Report

**Output #2**

**Output Measure**

- Inventory of land use/land cover patterns in the Apalachicola River Basin

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	{No Data Entered}	1

**Output #3**

**Output Measure**

- Data on soil erosion and nutrient loss under fallow condition at the study site

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	{No Data Entered}	4

**Output #4**

**Output Measure**

- Baseline aquatic insects data on two major water streams in the basin

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	{No Data Entered}	2

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Reduction in the amount of agriculture runoff into groundwater; Adoption of program recommendations for improving water quality; Preservation of Florida's water resources; Improved environmental stewardship; Better understanding of aquatic fauna; Well-trained graduate and undergraduate students in soil and water sciences.
2	Information on changing land-use patterns in the Apalachicola River basin
3	Comparison of soil erosion measurements by the Mesh-bag method and the simulation results of RUSLE (the Universal Soil Loss Equation)

## **Outcome #1**

### **1. Outcome Measures**

Reduction in the amount of agriculture runoff into groundwater; Adoption of program recommendations for improving water quality; Preservation of Florida's water resources; Improved environmental stewardship; Better understanding of aquatic fauna; Well-trained graduate and undergraduate students in soil and water sciences.

Not Reporting on this Outcome Measure

## **Outcome #2**

### **1. Outcome Measures**

Information on changing land-use patterns in the Apalachicola River basin

### **2. Associated Institution Types**

- 1890 Research

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	{No Data Entered}	8

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

The Apalachicola River Basin is a part of the greater Apalachicola-Chattahoochee- Flint Basin comprising almost 20, sq miles spread in three states: Georgia, Alabama and Florida. The water demands have dramatically increased in the watershed due to: growing population around Atlanta, increase in irrigation acreage in mid-Georgia and marine and fisheries need in Florida. An inventory of land use pattern will assist the decision makers in maintaining water sustainability in the region. Agriculture being the major user of the water resources, it is imperative that we better understand the future demand for water.

#### **What has been done**

We are collecting land-use data generated by various state agencies within the tri-state area and identifying the information gaps.

#### **Results**

We have developed land-use/land cover maps of the watershed.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water

#### Outcome #3

##### 1. Outcome Measures

Comparison of soil erosion measurements by the Mesh-bag method and the simulation results of RUSLE (the Universal Soil Loss Equation)

##### 2. Associated Institution Types

- 1890 Research

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	4

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

The results of this study will generate quality field erosion data, which is valuable to scientific conservation policy and decision makers and farmers, because quality field soil erosion data is scarce and is urgently needed for reliable soil erosion models. Such models are the basis for soil and water conservation evaluations. A true field soil erosion data is of interest to farmers because they can judge for themselves the effects of a conservation practice.

###### **What has been done**

We surveyed and generated detailed landscape micro topographic (contour) map of the 163 acre Mears Farm in Marianna, Florida (peanut and cotton rotation). We conducted 4 experiments using mesh bags to study the redistribution of eroded soil and associated nutrient loss during rain events. Soil loss and soil redistribution amounts were calculated.

###### **Results**

We have generated detailed micro topographic maps of the study areas. According to the topo maps, we classified the areas in four erosion classes. The background information is critical to the mesh-bag method.

#### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships

#### **V(H). Planned Program (External Factors)**

##### **External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)

##### **Brief Explanation**

The mesh-bags that were accidentally plowed over in 2009 were reinstalled in 2010.

#### **V(I). Planned Program (Evaluation Studies and Data Collection)**

##### **1. Evaluation Studies Planned**

- During (during program)
- Time series (multiple points before and after program)

##### **Evaluation Results**

The study illustrates that information of soil redistribution (transportation within a field) and soil loss (transported out of a field) can be obtained in a relatively large field scale under unobstructed natural runoff conditions by the mesh-bag method, which was employed in this study. Evaluation of the aquatic fauna study shows that low diversity of aquatic insects in freshwater streams indicates possible impairment of the water body.

##### **Key Items of Evaluation**

No key items of evaluation to report during this time period.